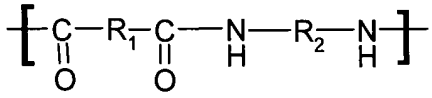
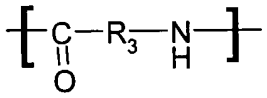
CLAIMS

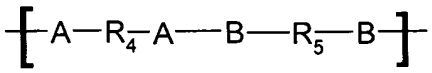
1. Process for the manufacture of nonwoven surfaces by direct melt spinning of filaments of a composition based on thermoplastic polymers comprising feeding the composition to a plurality of spinnerets each comprising several spinning orifices, feeding the filaments to a pneumatic attenuation device and a stage in which the filaments obtained are formed into a sheet, characterized in that the composition based on thermoplastic polymers comprises a polymeric matrix and/or a modifying polymeric additive comprising repeat units corresponding to the following general formulae:



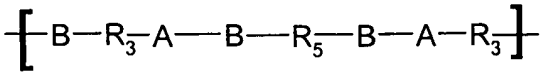
I



II



III



IV

in which:

R_1, R_2, R_3 and R_4, which are identical or different, represent aliphatic, cycloaliphatic or aromatic hydrocarbon chains comprising from 2 to 18 carbon atoms,

R_5 represents a polyether radical with a molecular weight of between 400 and 200 000,

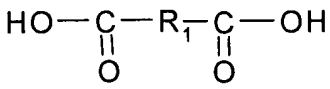
A and B represent the CO, NH or O groups; when A represents CO, B represents NH or O and vice versa,

and in that the polymeric matrix comprises at least one of the repeat units I or II and at least one of the repeat units III or IV when the additive is absent or does not comprise repeat units of formulae III or IV.

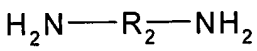
2. Process according to Claim 1, characterized in that the modifying polymeric additive is present in the composition at a concentration by weight of between 1% and 30% of the total composition.

3. Process according to Claim 2, characterized in that the modifying polymeric additive is present in the composition at a concentration by weight of between 1% and 15% of the total composition.

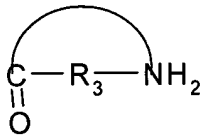
4. Process according to one of Claims 1 to 3, characterized in that the modifying polymeric additive is obtained by polymerization of the monomers of following formulae:



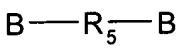
(V)



(VI)



(VII)



(VIII)

in which:

R_1, R_2 and R_3, which are identical or different, represent aliphatic, cycloaliphatic or aromatic hydrocarbon chains comprising from 2 to 18 carbon atoms,

R_5 represents a polyether radical with a molecular weight of between 400 and 200 000,

B represents the COOH, NH_2 or OH functional groups,

in the presence of a monofunctional chain-limiting compound.

5. Process according to Claim 4, characterized in that the chain-limiting agent is chosen from the group consisting of monofunctional acids and monofunctional amines.

6. Process according to claim 5, characterized in that the monofunctional compounds are chosen from the group consisting of acetic acid, propionic acid and benzylamine.

7. Process according to one of Claims 4 to 6, characterized in that the monomer of formula VIII is present at a concentration by weight of between 1% and 20% in the mixture of monomers of formulae V and/or VI and/or VII and of monomers VIII.

8. Process according to one of Claims 1 to 3, characterized in that the modifying polymeric additive is composed of:
   - at least one thermoplastic block and
   - at least one polyoxyalkylene block.

9. Process according to one of Claims 1 to 3 and 8, characterized in that the modifying polymeric additive comprises:
   - at least one thermoplastic polymer block formed by:

   a star or H macromolecular chain comprising at least one polyfunctional core and at least one branch or one segment of thermoplastic polymer connected to the core, the core comprising at least three identical reactive functional groups,
   and/or
   a linear macromolecular chain comprising a difunctional core and at least one segment of thermoplastic polymer connected to the core, and
   - at least one polyoxyalkylene block connected to at least a portion of the reactive ends of the thermoplastic polymer block.

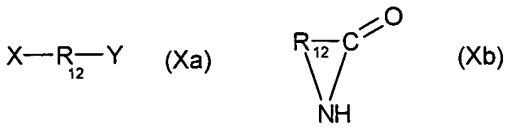
10. Process according to Claim 9, characterized in that the bonding between the thermoplastic polymer blocks are:
    - at least one free end of the star or H macromolecular chain, chosen from the thermoplastic polymer branch or segment ends and the ends of the polyfunctional core, is connected to a poly(alkylene oxide) block,

    and/or
    - at least one free end of the linear macromolecular chain, chosen from the thermoplastic polymer segment ends and the ends of the difunctional core, is connected to a poly(alkylene oxide) block; the two free ends of the linear macromolecular chain being connected to poly(alkylene oxide) blocks when the

thermoplastic polymer block comprises macromolecular chains solely of linear type.

11. Process according to Claim 10, characterized in that the star macromolecular chain is a star polyamide obtained by copolymerization from a mixture of monomers comprising:

- a polyfunctional compound comprising at least three identical reactive functional groups chosen from the amine functional group and the carboxylic acid functional group,
- monomers of following general formulae (Xa) and/or (Xb):



(Xa)

(Xb)

- if appropriate, monomers of following general formula (IX):

$$Z\text{-}R_6\text{-}Z \quad (IX)$$

in which:

Z represents a functional group identical to the reactive functional groups of the polyfunctional compound,

R_{12} and R_6 represent identical or different, substituted or unsubstituted, aliphatic, cycloaliphatic or aromatic hydrocarbon radicals which comprise from 2 to 20 carbon atoms and which can comprise heteroatoms,

Y is a primary amine functional group when X represents a carboxylic acid functional group, or

Y is a carboxylic acid functional group when X represents a primary amine functional group.

12. Process according to one of the preceding claims, characterized in that the concentration by weight of repeat units of formula III and/or IV, when the polymeric matrix comprises them, is between 0.5 and 5% by weight of the said matrix.

13. Process according to one of the preceding claims, characterized in that the repeat

units of formula III and/or IV originate from the reaction between a polyoxyalkylene monomer comprising two reactive terminal functional groups with a diacid monomer or a lactam.

14. Process according to one of the preceding claims, characterized in that the repeat unit of formula I is obtained by reaction between a diacid chosen from the group consisting of succinic acid, adipic acid, terephthalic acid, isophthalic acid, dodecanedioic acid and their mixtures and a diamine chosen from the group consisting of hexamethylenediamine, 2-methylpentamethylenediamine and meta-xylylenediamine.

15. Process according to one of the preceding claims, characterized in that the repeat unit of formula II is obtained by polycondensation of lactams or amino acids chosen from the group consisting of caprolactam, aminoundecanoic acid and aminododecanoic acid.